

**CANTON DROP FORGE**

4575 SOUTHWAY ST., S.W.

8529

HIGH PERFORMANCE CLOSED DIE FORGINGS

P.O. BOX 6902

CANTON, OHIO 44706

PURCHASING / PRODUCTION

PH. 216/477-4511

FAX 216/477-2046

PURCHASE ORDER

No 098623

DATE

7/01/97

PAGE

1

VENDOR
TO:

PARSONS ENGINEERING -PF

19101 VILLAVIEW RD

STE 301

CLEVELAND

OH 44119

SHIP
TO:

CANTON DROP FORGE

4575 SOUTHWAY STREET S.W.

P.O. BOX 6902

CANTON

OH 44706

ATTN:

STOCK ROOM

UNLESS OTHERWISE NOTED, SALES TAX DOES NOT APPLY ON ITEMS ORDERED

SHIP VIA:

~~BEST WAY~~

FREIGHT TERMS:

LINE NO.	ITEM NO.	DESCRIPTION/COMMENTS	U/M	PROMISED DATE	QUANTITY ORDERED	UNIT COST	TOTAL COST
1		CONDENSATE TREATMENT TESTING					
2		ASSUMING ALL REASONABLE ADVANTAGE HAS					
3		BEEN TAKEN OF SUPPLIER BENCH TESTING					
4							
5		\$6600.00 - PER PROPOSAL OF 6/12/97 & NAMED					
6		"CONDENSATE TREATMENT TESTING"					
7							
8		KJH ESCROW KH1076					
		ATTACH APPLICABLE MATERIAL SAFETY DATA SHEETS (MSDS)					
		TO THE PACKING LIST FOR THE PRODUCT(S) ORDERED.					
		NOTE: IF NOT ATTACHED, INDICATE REASON OR DATE LATEST MSDS					
		REVISION WAS SENT TO CDF. MATERIAL CANNOT BE RECEIVED					
		WITHOUT MSDS OR EXPLANATION.					
		Purchase Order Total					.00

ALL ORDERS:

- Terms and Conditions on reverse side are part of this Purchase Order
- Acceptance - Unless otherwise stated herein, this order must be accepted by the Seller signing and returning the attached acknowledgment copy to Buyer within 10 days from the date of this order, and it is understood that the commencement of any work or the performance of any services hereunder by Seller shall constitute acceptance by Seller of this purchase order and

STEEL ORDERS:

- Certified test reports in triplicate are to accompany steel shipments. Discount will be taken from date of receipt of goods or test reports, whichever is later.
- Do not deviate from established producing practice in fulfilling the requirements of this order.

INVOICE DAY OF SHIPMENT TO:

CANTON DROP FORGE
P.O. BOX 6902
CANTON, OH 44706

RV

R. D. Decker

Parsons ES will install a temporary pump, filter housing and piping for testing of filters. Filters to be tested will either be bag filters or cartridge type. Cartridge type filters may be wound or paper element type. It is anticipated that filters of three different micron ratings will be tested. A preliminary selection is 5, 25, and 100 microns. Oil and water.

CDF001765



PARSONS ENGINEERING SCIENCE, INC.

REMIT PAYMENT TO:
File 91849
Los Angeles, CA 90074-1849
Attn: Accounts Receivables

Street Address:
19101 VILLAVIEW ROAD, SUITE 301
CLEVELAND, OHIO 44119

Tel: (216) 486-9005
Fax: (216) 486-6119

I N V O I C E

JULY 8, 1997

2(b)

TO: CANTON DROP FORGE, INC.
4575 SOUTHWAY STREET
CANTON, OHIO

44706

ATTN: MR. KEITH HOUSEKNECHT

CLIENT REF. :
INVOICE NO. : 00755152
PROJECT NO. : 731549-02
CLIENT NO. : 71275

PLEASE REMIT TO:
PARSONS ENGINEERING SCIENCE, INC
FILE 91849
LOS ANGELES, CALIFORNIA 90074-1849

FOR: CANTON DROP FORGE, WBS 02000

AUTHORIZATION: P.O. ?????? 98623

AMOUNT AUTHORIZED: \$6,600.00

BILLING PERIOD: PROJECT INITIATION THROUGH 6/27/97

	CUR. HOURS	CURRENT PERIOD THROUGH 6/27/97	CUM. HOURS	CUMULATIVE-TO-DATE THROUGH 6/27/97
WBS 02000 - FILTRATION TESTING				
DIRECT LABOR	10.5	\$386.86	10.5	\$386.86
OH & PROFIT @1.95 X D.L.		\$754.38		\$754.38
SUBTOTAL:		\$1,141.24		\$1,141.24
TOTAL THIS INVOICE:		\$1,141.24		\$1,141.24

CDF001766

DETAIL OF PROFESSIONAL SERVICES
FOR THE PERIOD ENDING 6/27/97

PAGE: 1

CLIENT REF.:
INVOICE NO.: 00755152
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRLBR15C

EMPLOYEE NAME	ADJ. DATE	REGULAR HOURS	O/T HOURS	TOTAL HOURS	BILLING RATE	LABOR BILLING	PREMIUM BILLING

30 SENIOR SPECIALIST I							
CAROL M BOWERS		.50		.50	86.38	43.19	
CLASSIFICATION TOTALS		.50		.50		43.19	
90 PRINC ENG/SCIENTIST I							
MICHAEL R LEFFLER		10.00		10.00	109.80	1,098.05	
CLASSIFICATION TOTALS		10.00		10.00		1,098.05	
TOTAL LABOR BILLING		10.50		10.50		1,141.24	

CDF001767

DETAIL OF PROFESSIONAL SERVICES
FOR THE PERIOD ENDING 6/27/97

PAGE: 1

CLIENT REF.:
INVOICE NO.: 00755152
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRLBR11C

W/E DATE	EMPLOYEE NAME	EMPLOYEE CLASSIFICATION	ADJ. DATE	RATE	REGULAR HOURS	O/T HOURS	TOTAL HOURS
02000 FILTRATION TESTING							
6/27/97	MICHAEL R LEFFLER	PRINC ENG/SCIENTIST I		109.80	10.00		10.00
6/27/97	CAROL M BOWERS	SENIOR SPECIALIST I		86.38	.50		.50
	ITEM TOTALS				10.50		10.50
	TOTAL LABOR HOURS				10.50		10.50

CDF001768



PARSONS ENGINEERING SCIENCE, INC.

REMIT PAYMENT TO:
File 91849
Los Angeles, CA 90074-1849
Attn: Accounts Receivables

Street Address:
19101 VILLAVIEW ROAD, SUITE 301
CLEVELAND, OHIO 44119

Tel: (216) 486-9005
Fax: (216) 486-6119

INVOICE

JULY 8, 1997

TO: CANTON DROP FORGE, INC.
4575 SOUTHWAY STREET
CANTON, OHIO

44706

ATTN: MR. KEITH HOUSEKNECHT

CLIENT REF. :
INVOICE NO. : 00755152
PROJECT NO. : 731549-02
CLIENT NO. : 71275

PLEASE REMIT TO:
PARSONS ENGINEERING SCIENCE, INC
FILE 91849
LOS ANGELES, CALIFORNIA 90074-1849

FOR: CANTON DROP FORGE, WBS 02000
AUTHORIZATION: P.O. ??????
AMOUNT AUTHORIZED: \$6,600.00

BILLING PERIOD: PROJECT INITIATION THROUGH 6/27/97

	CUR. HOURS	CURRENT PERIOD THROUGH 6/27/97	CUM. HOURS	CUMULATIVE-TO-DATE THROUGH 6/27/97
WBS 02000 - FILTRATION TESTING				
DIRECT LABOR	10.5	\$386.86	10.5	\$386.86
OH & PROFIT @1.95 X D.L.		\$754.38		\$754.38
SUBTOTAL:		\$1,141.24		\$1,141.24
TOTAL THIS INVOICE:		\$1,141.24		\$1,141.24

CDF001769

DETAIL OF PROFESSIONAL SERVICES
FOR THE PERIOD ENDING 6/27/97

PAGE: 1

CLIENT REF.:
INVOICE NO.: 00755152
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRLBR15C

EMPLOYEE NAME	ADJ. DATE	REGULAR HOURS	O/T HOURS	TOTAL HOURS	BILLING RATE	LABOR BILLING	PREMIUM BILLING

30 SENIOR SPECIALIST I							
CAROL M BOWERS		.50		.50	86.38	43.19	
CLASSIFICATION TOTALS		.50		.50		43.19	
90 PRINC ENG/SCIENTIST I							
MICHAEL R LEFFLER		10.00		10.00	109.80	1,098.05	
CLASSIFICATION TOTALS		10.00		10.00		1,098.05	
TOTAL LABOR BILLING		10.50		10.50		1,141.24	

CDF001770

DETAIL OF PROFESSIONAL SERVICES
FOR THE PERIOD ENDING 6/27/97

PAGE: 1

CLIENT REF.:
INVOICE NO.: 00755152
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRLBR11C

W/E DATE	EMPLOYEE NAME	EMPLOYEE CLASSIFICATION	ADJ. DATE	RATE	REGULAR HOURS	O/T HOURS	TOTAL HOURS
02000 FILTRATION TESTING							
6/27/97	MICHAEL R LEFFLER	PRINC ENG/SCIENTIST I		109.80	10.00		10.00
6/27/97	CAROL M BOWERS	SENIOR SPECIALIST I		86.38	.50		.50
	ITEM TOTALS				10.50		10.50
	TOTAL LABOR HOURS				10.50		10.50

CDF001771



PARSONS ENGINEERING SCIENCE, INC.

REMIT PAYMENT TO:
File 91849
Los Angeles, CA 90074-1849
Attn: Accounts Receivables

Street Address:
19101 VILLAVIEW ROAD, SUITE 301
CLEVELAND, OHIO 44119

Tel: (216) 486-9005
Fax: (216) 486-6119

INVOICE

2(b)

AUGUST 8, 1997

TO: CANTON DROP FORGE, INC.
4575 SOUTHWAY STREET
CANTON, OHIO

44706

ATTN: MR. KEITH HOUSEKNECHT

CLIENT REF. :
INVOICE NO. : 00802112
PROJECT NO. : 731549-02
CLIENT NO. : 71275

PLEASE REMIT TO:
PARSONS ENGINEERING SCIENCE, INC
FILE 91849
LOS ANGELES, CALIFORNIA 90074-1849

FOR: CANTON DROP FORGE, WBS 02000
AUTHORIZATION: P.O. 98623
AMOUNT AUTHORIZED: \$6,600.00

BILLING PERIOD: 6/28/97 THROUGH 7/25/97

	CUR. HOURS	CURRENT PERIOD THROUGH 7/25/97	CUM. HOURS	CUMULATIVE-TO-DATE THROUGH 7/25/97
WBS 02000 - FILTRATION TESTING				
DIRECT LABOR	39.0	\$1,307.72	49.5	\$1,694.58
OH & PROFIT @1.95 X D.L.		\$2,550.06		\$3,304.44
ODCS WITHOUT HANDLING		\$46.48		\$46.48
SUBTOTAL:		\$3,904.26		\$5,045.50
TOTAL THIS INVOICE:		\$3,904.26		\$5,045.50

CDF001772

DETAIL OF OTHER DIRECT COSTS
 FOR THE PERIOD ENDING 7/25/97
 BY JOB/WBS/COST CODE

PAGE: 1

CLIENT REF.:
 INVOICE NO.: 00802112
 PROJECT NO.: 731549-02
 CLIENT NO.: 71275
 FORMAT NAME: SBLRODCWTT

EQUIP/			INVOICE	DATE		BATCH	
REF	VEND		DATE	WORKED	DESCRIPTION	NO.	AMOUNT
NO.	NO.	NAME	DATE	WORKED	DESCRIPTION	NO.	AMOUNT
731549		CANTON DROP FORGE, WASTEWATER					
02000		FILTRATION TESTING					
9212		AUTOMOBILE MILEAGE					
079703505	40953	MICHAEL R LEFFLER	7/04/97			389	44.33
					ACCOUNT TOTAL		44.33
9543		POSTAGE					
	00052		7/18/97		POSTAGE	86	.55
					ACCOUNT TOTAL		.55
9551		COPIER CHARGES					
	30270		7/18/97		COPIER CHARGES	94	.80
	30270		7/18/97		COPIER CHARGES	96	.50
	30270		7/18/97		COPIER CHARGES	96	.30
					ACCOUNT TOTAL		1.60
					FILTRATION TESTING		46.48
					JOB 731549 TOTAL		46.48
					TOTAL, OTHER DIRECT COSTS		46.48

CDF001773



PARSONS ENGINEERING SCIENCE, INC.

REMIT PAYMENT TO:
File 91849
Los Angeles, CA 90074-1849
Attn: Accounts Receivables

Street Address:
19101 VILLAVIEW ROAD, SUITE 301
CLEVELAND, OHIO 44119

Tel: (216) 486-9005
Fax: (216) 486-6119

INVOICE

AUGUST 8, 1997

TO: CANTON DROP FORGE, INC.
4575 SOUTHWAY STREET
CANTON, OHIO

44706

ATTN: MR. KEITH HOUSEKNECHT

CLIENT REF. :
INVOICE NO. : 00802112
PROJECT NO. : 731549-02
CLIENT NO. : 71275

PLEASE REMIT TO:
PARSONS ENGINEERING SCIENCE, INC
FILE 91849
LOS ANGELES, CALIFORNIA 90074-1849

FOR: CANTON DROP FORGE, WBS 02000
AUTHORIZATION: P.O. 98623
AMOUNT AUTHORIZED: \$6,600.00

BILLING PERIOD: 6/28/97 THROUGH 7/25/97

	CUR. HOURS	CURRENT PERIOD THROUGH 7/25/97	CUM. HOURS	CUMULATIVE-TO-DATE THROUGH 7/25/97
WBS 02000 - FILTRATION TESTING				
DIRECT LABOR	39.0	\$1,307.72	49.5	\$1,694.58
OH & PROFIT @1.95 X D.L.		\$2,550.06		\$3,304.44
ODCS WITHOUT HANDLING		\$46.48		\$46.48
SUBTOTAL:		\$3,904.26		\$5,045.50
TOTAL THIS INVOICE:		\$3,904.26		\$5,045.50

CDF001774

DETAIL OF PROFESSIONAL SERVICES
FOR THE PERIOD ENDING 7/25/97

PAGE: 1

CLIENT REF.:
INVOICE NO.: 00802112
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRLBR15C

EMPLOYEE NAME	ADJ. DATE	REGULAR HOURS	O/T HOURS	TOTAL HOURS	BILLING RATE	LABOR BILLING	PREMIUM BILLING
35 SPVG SPECIALIST II							
MARK W STRAUB		2.00		2.00	55.01	110.04	
CLASSIFICATION TOTALS		2.00		2.00		110.04	
55 STAFF ENGR/SCIENTIST II							
ADAM C TUCKER		1.50		1.50	40.79	61.18	
CLASSIFICATION TOTALS		1.50		1.50		61.18	
70 SR ENGINEER/SCIENTIST I							
JOSEPH D PETERLIN		4.00		4.00	56.92	227.68	
CLASSIFICATION TOTALS		4.00		4.00		227.68	
90 PRINC ENG/SCIENTIST I							
MICHAEL R LEFFLER		31.50		31.50	109.80	3,458.88	
CLASSIFICATION TOTALS		31.50		31.50		3,458.88	
TOTAL LABOR BILLING		39.00		39.00		3,857.78	

CDF001775

DETAIL OF PROFESSIONAL SERVICES
FOR THE PERIOD ENDING 7/25/97

PAGE: 1

CLIENT REF.:
INVOICE NO.: 00802112
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRLBR11C

W/E DATE	EMPLOYEE NAME	EMPLOYEE CLASSIFICATION	ADJ. DATE	RATE	REGULAR HOURS	O/T HOURS	TOTAL HOURS
02000 FILTRATION TESTING							
7/04/97	MICHAEL R LEFFLER	PRINC ENG/SCIENTIST I		109.80	9.00		9.00
7/11/97	MICHAEL R LEFFLER	PRINC ENG/SCIENTIST I		109.80	7.00		7.00
7/18/97	MICHAEL R LEFFLER	PRINC ENG/SCIENTIST I		109.80	3.00		3.00
7/25/97	MICHAEL R LEFFLER	PRINC ENG/SCIENTIST I		109.80	12.50		12.50
7/25/97	MARK W STRAUB	SPVG SPECIALIST II		55.01	2.00		2.00
7/25/97	JOSEPH D PETERLIN	SR ENGINEER/SCIENTIST I		56.92	4.00		4.00
7/25/97	ADAM C TUCKER	STAFF ENGR/SCIENTIST II		40.79	1.50		1.50
	ITEM TOTALS				39.00		39.00
	TOTAL LABOR HOURS				39.00		39.00

CDF001776

DETAIL OF OTHER DIRECT COSTS
FOR THE PERIOD ENDING 7/25/97
BY WBS/COST CODE

INVOICE NO.: 00802112
PROJECT NO.: 731549-02
CLIENT NO.: 71275
FORMAT NAME: SBLRFODC03
REF:

REFERENCE NUMBER	DESCRIPTION OF EXPENSES	AMOUNT
-----	-----	-----
02000: FILTRATION TESTING		
9210	TRAVEL	44.33
9540	FREIGHT/EXPRESS/POSTAGE	.55
9550	REPRODUCTION CHARGES	1.60
	FILTRATION TESTING	46.48
	GRAND TOTAL OTHER DIRECT COSTS	46.48

DETAIL OF OTHER DIRECT COSTS
 FOR THE PERIOD ENDING 7/25/97
 BY JOB/WBS/COST CODE

PAGE: 1

CLIENT REF.:
 INVOICE NO.: 00802112
 PROJECT NO.: 731549-02
 CLIENT NO.: 71275
 FORMAT NAME: SBLRODCWTT

REF NO.	EQUIP/ VEND NO.	NAME	INVOICE DATE	DATE WORKED	DESCRIPTION	BATCH NO.	AMOUNT
731549		CANTON DROP FORGE, WASTEWATER					
	02000	FILTRATION TESTING					
	9212	AUTOMOBILE MILEAGE					
079703505	40953	MICHAEL R LEFFLER	7/04/97			389	44.33
					ACCOUNT TOTAL		44.33
	9543	POSTAGE					
	00052		7/18/97	POSTAGE		86	.55
					ACCOUNT TOTAL		.55
	9551	COPIER CHARGES					
	30270		7/18/97	COPIER CHARGES		94	.80
	30270		7/18/97	COPIER CHARGES		96	.50
	30270		7/18/97	COPIER CHARGES		96	.30
					ACCOUNT TOTAL		1.60
					FILTRATION TESTING		46.48
					JOB 731549 TOTAL		46.48
					TOTAL, OTHER DIRECT COSTS		46.48

CDF001778

PARSONS ENGINEERING SCIENCE, INC.

A UNIT OF PARSONS INFRASTRUCTURE & TECHNOLOGY GROUP INC

19101 Villaview Road, Suite 301 • Cleveland, Ohio 44119 • (216) 486-9005 • Fax (216) 486-6119

PARESCL/697/Dce/MRL4-13

12 June 1997

1(c)

Mr. Keith Houseknecht
Manager, Plant Engineering
CANTON DROP FORGE, INC.
4575 Southway Street
Canton, Ohio 44706

Subject: Condensate Treatment Testing

Dear Mr. Houseknecht:

Per our telephone conversation of 10 June 1997, Parsons Engineering Science (Parsons ES) is pleased to submit this proposal for further testing to establish design criteria for a condensate treatment system for Canton Drop Forge. Our preliminary investigation as reported to you in the draft report (*Canton Drop Forge Process Water and Wastewater Recycling/Treatment Investigation Summary Report*) indicated that conventional filtration may be sufficient to reduce the oil and grease in the condensate to satisfactory levels for discharge to the sanitary sewer or even for reuse in the hot process softener (HPS). Although the qualitative filtration testing was very promising, the quantitative test results were suspect because of the reported low influent oil and grease. Because of its simplicity, low capital cost, and minimal operations/maintenance requirements the direct filtration option deserves further exploration.

Parsons ES proposes to conduct further testing to:

1. Determine the filtrate flow rate;
2. Determine the effluent oil & grease obtainable by simple filtration
3. Project the probable filter life.

Establishing these parameters through on-site testing will provide a basis for deciding whether to discharge to the sanitary sewer or to the HPS and will provide the required information to design a full-scale system.

Scope of Work

Flow Measurement

Parsons ES will measure the condensate flow using the "bucket and stopwatch" method. This will be accomplished by measuring the time to fill a calculated volume in the existing 1,500-gallon condensate tank, and/or measuring the time to fill a container of measured volume such as a 55-gallon drum. If practical, Parsons ES will devise a method to be used by Canton Drop Forge personnel to obtain flow measurements at different times to obtain more data on flow variation over time.

Filtration

Parsons ES will install a temporary pump, filter housing and piping for testing of filters. Filters to be tested will either be bag filters or cartridge type. Cartridge type filters may be wound or paper element type. It is anticipated that filters of three different micron ratings will be tested. A preliminary selection is 5, 25, and 100 microns. Oil and grease, suspended solids and

temperature measurements will be collected during the tests and the flow rate and pressure will be monitored.

Preliminary Testing Procedure

Condensate will be pumped at a flow rate of approximately 5 gpm through the filter with the smallest micron rating. The test will be run for approximately one hour. The filter inlet and discharge pressure will be recorded at the beginning and end of the test and periodically throughout the test. A sample of the influent condensate will be collected near the beginning of the test and analyzed for oil & grease and suspended solids. Samples of the filter effluent will be collected near the beginning of the test and near the end of the test and analyzed for the same parameters. The condensate temperature will be checked and the flow rate through the filter will be measured at the beginning and end of the test. The test will be terminated early if the pressure drop through the filter becomes too great (approaches or exceeds the manufacturer's recommendations).

The same one-hour test will then be conducted using each of the other two filter sizes. Based on the flow and pressure drop data collected, and the visual appearance of the filtered condensate, Parsons ES will select the finest filter which appears to give satisfactory performance for further testing. The selected filter will be reinstalled in the filter housing, and run for approximately four hours or more to provide further information for projecting filter life. During the extended run, inlet and outlet pressures will be recorded, one additional inlet sample and two additional discharge samples will be collected for analysis, and the flow rate will be measured.

Report

Parsons ES will prepare a letter report summarizing the results of the tests. Assuming filtration proves to be a viable alternative for treatment of the condensate, the report will include a conceptual design and cost estimate for a permanent system.

Sequencing of Work

All flow measurements and filter testing will be performed on Tuesday through Thursday when the drop forges are in full operation. The following site visits are anticipated:

1. Engineer--One half day to collect data such as tank dimensions, piping arrangement, and other information required to set up flow measurement and filtration testing.
2. Engineer--One day to conduct flow measurements.
3. Technician--One half day to install filter testing equipment
4. Engineer--One day to conduct filtration tests.
5. Technician--One half day to dismantle testing equipment and to restore the system to pretest conditions.

Item one will occur shortly after receipt of a notice to proceed. After the necessary equipment has been obtained (approximately two to three weeks), Items 2 and 3 will occur on the same day and items 4 and 5 will occur on the following two days.

Laboratory analysis will take approximately two weeks. Allowing another week for preparation of a draft report brings the total schedule to approximately eight weeks from receipt of notice to proceed to delivery of the draft report.

Compensation

Parsons ES proposes to perform the services offered in this proposal on a "time and expenses, cost not-to-exceed" basis. Labor and expenses will be invoiced in accordance with the terms and conditions of our previously submitted (11 April 1997) Engineering Services Agreement (ESA). Parsons ES will not invoice Canton Drop Forge for more than \$6,600 without further authorization. This budget estimate assumes that the project can be initiated on or by 20 June 1997.

This not-to-exceed amount is based on the following:

Engineering--41 hours
Technician--8 hours
Laboratory Analysis--\$720
Equipment Rental/Purchase and ODCs--\$780

Additional Work Required

It should be noted that the work of this proposal is essential to determining the final disposal of the condensate, but additional work will be required to complete the project. Assuming that the testing results are satisfactory and filtration is selected as the treatment method, additional efforts will be required to select and implement the final disposal method. If filtration performance is not satisfactory, further evaluation of other treatment methods will be required.

If a consistently low oil and grease content can be obtained from the filters, Canton Drop Forge may want to consider returning the water to the HPS. As we have discussed, some investigation should be conducted to determine the limitations on oil & grease and possibly other parameters in the feed water to the HPS and to assure that significant oil and grease carry-over to the boilers is not already occurring. If the treated condensate is not clean enough to consider as an HPS feed water, discharge to the sanitary sewer should be implemented. This will require discussions with the City and/or Ohio EPA to establish permitting requirements and applicable limits. Permit applications would then have to be filed. With either disposal option, the permanent filtration system would have to be designed and installed (or possibly modified if installed under the modified approach below) along with the discharge piping to the HPS or sanitary sewer.

Alternative Approach

The scope of work proposed above is per our discussion of 10 June 1997 and includes installation of a temporary filtration system for testing purposes. As we have previously noted, a permanent filtration system is not very expensive. Canton Drop Forge may prefer to install a permanent system at this time to save the costs of the temporary system. There is some risk to this approach in that if filtration does not prove to be the best option or even a viable option, Canton Drop Forge will have purchased and installed equipment which has no further use. The preliminary testing results indicate that filtration can provide sufficient oil and grease removal, but the life of the filter cartridges cannot be predicted from the laboratory tests conducted.

Most of the proposed work is related to determining the condensate flow rate, selecting the proper filter size, and evaluating the performance of the filtration system. These items all need to be accomplished whether a temporary or permanent system is installed. The above proposal includes a total of \$1,500 for purchase/rental and installation of the temporary filtration system. Parsons ES estimates that the filter housing, pump, piping, valves, and gages required for a permanent system would cost \$2,000. Some additional engineering would be required to identify

Mr. Keith Houseknecht, Manager, Plant Engineering
CANTON DROP FORGE, INC.
12 June 1997
Page 4- Dee/MRL4-13

the proper components to be purchased and to prepare a layout drawing to guide Canton Drop Forge in the installation of the components.

If Canton Drop Forge prefers to go directly to the permanent installation, our approach would change slightly. Referring to the Sequencing of Work section, Items 1 (information collection) and 2 (flow measurement) would be accomplished as described. Parsons ES would then design the system and specify the components for purchase and installation by Canton Drop Forge. After Canton Drop Forge has installed the system, Parsons ES will complete Item 4 (filtration tests) and prepare a final report. Items 3 and 5 (installation and removal of equipment by Parsons ES) are no longer required, but the additional task of designing the system is inserted.

For this approach, Parsons ES will complete the flow measurement and design within three weeks following the notice to proceed. There will then be a break in services while Canton Drop Forge purchases and installs the permanent system. It will then take another four weeks to perform the testing and prepare the draft report. Allowing six weeks for purchase and installation of equipment, the draft report would be delivered 13 weeks from receipt of the notice to proceed.

Parsons ES will perform the work described in this alternative approach for a not-to-exceed price of \$6,800. In addition to this, Canton Drop Forge will have to spend an estimated \$2,000 to purchase the system components and then install them. However, if the system performs satisfactorily, no further time or money will be required for design and installation of a permanent system. This system, however, will still be discharging to Pond 2, and further efforts will be required to implement the final disposal of the treated condensate as discussed above.

This not-to-exceed amount is based on the following:

Engineering--49 hours
Drafting/Support Services--8 hours
Laboratory Analysis--\$720
ODCs--\$275

If this proposal is acceptable to you, please issue a purchase order referencing this proposal and our ESA. Also indicate whether you are authorizing the proposed approach for \$6,600 or the alternative approach for \$6,800. This will serve as our authorization to proceed. Thank you for the opportunity to present this proposal. If you have any questions or wish to discuss this proposal, please do not hesitate to call.

Very truly yours,

PARSONS ENGINEERING SCIENCE

Wilson H. Rownd/CMB

Wilson H. Rownd, P.E.
Vice President/Manager

Michael R. Leffler

Michael R. Leffler, P.E.
Associate

WHR/MRL/dee
cc: CMB (File)

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PARSONS ENGINEERING SCIENCE, INC.

A UNIT OF PARSONS INFRASTRUCTURE & TECHNOLOGY GROUP INC

19101 Villaview Road, Suite 301 • Cleveland, Ohio 44119 • (216) 486-9005 • Fax (216) 486-6119

PARESCL/697/Dee/MRL4-13

12 June 1997

1(c)

Mr. Keith Houseknecht
Manager, Plant Engineering
CANTON DROP FORGE, INC.
4575 Southway Street
Canton, Ohio 44706

Subject: Condensate Treatment Testing

Dear Mr. Houseknecht:

Per our telephone conversation of 10 June 1997, Parsons Engineering Science (Parsons ES) is pleased to submit this proposal for further testing to establish design criteria for a condensate treatment system for Canton Drop Forge. Our preliminary investigation as reported to you in the draft report (*Canton Drop Forge Process Water and Wastewater Recycling/Treatment Investigation Summary Report*) indicated that conventional filtration may be sufficient to reduce the oil and grease in the condensate to satisfactory levels for discharge to the sanitary sewer or even for reuse in the hot process softener (HPS). Although the qualitative filtration testing was very promising, the quantitative test results were suspect because of the reported low influent oil and grease. Because of its simplicity, low capital cost, and minimal operations/maintenance requirements the direct filtration option deserves further exploration.

Parsons ES proposes to conduct further testing to:

1. Determine the filtrate flow rate;
2. Determine the effluent oil & grease obtainable by simple filtration
3. Project the probable filter life.

Establishing these parameters through on-site testing will provide a basis for deciding whether to discharge to the sanitary sewer or to the HPS and will provide the required information to design a full-scale system.

Scope of Work

Flow Measurement

Parsons ES will measure the condensate flow using the "bucket and stopwatch" method. This will be accomplished by measuring the time to fill a calculated volume in the existing 1,500-gallon condensate tank, and/or measuring the time to fill a container of measured volume such as a 55-gallon drum. If practical, Parsons ES will devise a method to be used by Canton Drop Forge personnel to obtain flow measurements at different times to obtain more data on flow variation over time.

Filtration

Parsons ES will install a temporary pump, filter housing and piping for testing of filters. Filters to be tested will either be bag filters or cartridge type. Cartridge type filters may be wound or paper element type. It is anticipated that filters of three different micron ratings will be tested. A preliminary selection is 5, 25, and 100 microns. Oil and grease, suspended solids and

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temperature measurements will be collected during the tests and the flow rate and pressure will be monitored.

Preliminary Testing Procedure

Condensate will be pumped at a flow rate of approximately 5 gpm through the filter with the smallest micron rating. The test will be run for approximately one hour. The filter inlet and discharge pressure will be recorded at the beginning and end of the test and periodically throughout the test. A sample of the influent condensate will be collected near the beginning of the test and analyzed for oil & grease and suspended solids. Samples of the filter effluent will be collected near the beginning of the test and near the end of the test and analyzed for the same parameters. The condensate temperature will be checked and the flow rate through the filter will be measured at the beginning and end of the test. The test will be terminated early if the pressure drop through the filter becomes too great (approaches or exceeds the manufacturer's recommendations).

The same one-hour test will then be conducted using each of the other two filter sizes. Based on the flow and pressure drop data collected, and the visual appearance of the filtered condensate, Parsons ES will select the finest filter which appears to give satisfactory performance for further testing. The selected filter will be reinstalled in the filter housing, and run for approximately four hours or more to provide further information for projecting filter life. During the extended run, inlet and outlet pressures will be recorded, one additional inlet sample and two additional discharge samples will be collected for analysis, and the flow rate will be measured.

Report

Parsons ES will prepare a letter report summarizing the results of the tests. Assuming filtration proves to be a viable alternative for treatment of the condensate, the report will include a conceptual design and cost estimate for a permanent system.

Sequencing of Work

All flow measurements and filter testing will be performed on Tuesday through Thursday when the drop forges are in full operation. The following site visits are anticipated:

1. Engineer--One half day to collect data such as tank dimensions, piping arrangement, and other information required to set up flow measurement and filtration testing.
2. Engineer--One day to conduct flow measurements.
3. Technician--One half day to install filter testing equipment
4. Engineer--One day to conduct filtration tests.
5. Technician--One half day to dismantle testing equipment and to restore the system to pretest conditions.

Item one will occur shortly after receipt of a notice to proceed. After the necessary equipment has been obtained (approximately two to three weeks), Items 2 and 3 will occur on the same day and items 4 and 5 will occur on the following two days.

Laboratory analysis will take approximately two weeks. Allowing another week for preparation of a draft report brings the total schedule to approximately eight weeks from receipt of notice to proceed to delivery of the draft report.

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Mr. Keith Houseknecht, Manager, Plant Engineering
CANTON DROP FORGE, INC.
12 June 1997
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Compensation

Parsons ES proposes to perform the services offered in this proposal on a "time and expenses, cost not-to-exceed" basis. Labor and expenses will be invoiced in accordance with the terms and conditions of our previously submitted (11 April 1997) Engineering Services Agreement (ESA). Parsons ES will not invoice Canton Drop Forge for more than \$6,600 without further authorization. This budget estimate assumes that the project can be initiated on or by 20 June 1997.

This not-to-exceed amount is based on the following:

Engineering--41 hours
Technician--8 hours
Laboratory Analysis--\$720
Equipment Rental/Purchase and ODCs--\$780

Additional Work Required

It should be noted that the work of this proposal is essential to determining the final disposal of the condensate, but additional work will be required to complete the project. Assuming that the testing results are satisfactory and filtration is selected as the treatment method, additional efforts will be required to select and implement the final disposal method. If filtration performance is not satisfactory, further evaluation of other treatment methods will be required.

If a consistently low oil and grease content can be obtained from the filters, Canton Drop Forge may want to consider returning the water to the HPS. As we have discussed, some investigation should be conducted to determine the limitations on oil & grease and possibly other parameters in the feed water to the HPS and to assure that significant oil and grease carry-over to the boilers is not already occurring. If the treated condensate is not clean enough to consider as an HPS feed water, discharge to the sanitary sewer should be implemented. This will require discussions with the City and/or Ohio EPA to establish permitting requirements and applicable limits. Permit applications would then have to be filed. With either disposal option, the permanent filtration system would have to be designed and installed (or possibly modified if installed under the modified approach below) along with the discharge piping to the HPS or sanitary sewer.

Alternative Approach

The scope of work proposed above is per our discussion of 10 June 1997 and includes installation of a temporary filtration system for testing purposes. As we have previously noted, a permanent filtration system is not very expensive. Canton Drop Forge may prefer to install a permanent system at this time to save the costs of the temporary system. There is some risk to this approach in that if filtration does not prove to be the best option or even a viable option, Canton Drop Forge will have purchased and installed equipment which has no further use. The preliminary testing results indicate that filtration can provide sufficient oil and grease removal, but the life of the filter cartridges cannot be predicted from the laboratory tests conducted.

Most of the proposed work is related to determining the condensate flow rate, selecting the proper filter size, and evaluating the performance of the filtration system. These items all need to be accomplished whether a temporary or permanent system is installed. The above proposal includes a total of \$1,500 for purchase/rental and installation of the temporary filtration system. Parsons ES estimates that the filter housing, pump, piping, valves, and gages required for a permanent system would cost \$2,000. Some additional engineering would be required to identify

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the proper components to be purchased and to prepare a layout drawing to guide Canton Drop Forge in the installation of the components.

If Canton Drop Forge prefers to go directly to the permanent installation, our approach would change slightly. Referring to the Sequencing of Work section, Items 1 (information collection) and 2 (flow measurement) would be accomplished as described. Parsons ES would then design the system and specify the components for purchase and installation by Canton Drop Forge. After Canton Drop Forge has installed the system, Parsons ES will complete Item 4 (filtration tests) and prepare a final report. Items 3 and 5 (installation and removal of equipment by Parsons ES) are no longer required, but the additional task of designing the system is inserted.

For this approach, Parsons ES will complete the flow measurement and design within three weeks following the notice to proceed. There will then be a break in services while Canton Drop Forge purchases and installs the permanent system. It will then take another four weeks to perform the testing and prepare the draft report. Allowing six weeks for purchase and installation of equipment, the draft report would be delivered 13 weeks from receipt of the notice to proceed.

Parsons ES will perform the work described in this alternative approach for a not-to-exceed price of \$6,800. In addition to this, Canton Drop Forge will have to spend an estimated \$2,000 to purchase the system components and then install them. However, if the system performs satisfactorily, no further time or money will be required for design and installation of a permanent system. This system, however, will still be discharging to Pond 2, and further efforts will be required to implement the final disposal of the treated condensate as discussed above.

This not-to-exceed amount is based on the following:

Engineering--49 hours
Drafting/Support Services--8 hours
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